Seabasing Roadmap†: *A Littoral Warfare Systems Perspective*

Dr. David P. Skinner,
LWS Product Area Director

October 2004

† **Seabasing Roadmap N703/*N75 Tasking to LWS Product Area Director***

NAVSEA PRODUCT AREAS

Force Level Warfare Systems
Warfare Systems Analysis, Architecture and Requirements
Warfare Systems Engineering, Integration, T&E and Assmt

Ships & Ship Systems
Ship Integration and Design
Hull Forms and Propulsors
Machinery Systems and Components
Structures and Materials
Environmental Quality Systems
Vulnerability and Survivability Systems
Signature and Silencing Systems

Surface Ship Combat Systems
Air and Surface Surveillance and Detection Systems
Combat Control Systems
Engagement Systems
Electronic Warfare Systems
Combat Systems Eng, Integration, T&E & Assessment

Littoral Warfare Systems
Mine Warfare Systems
Expeditionary Maneuver/ Amphibious Warfare Systems
Special Warfare / Special Operations Systems
Diving and Life Support Systems

Navy Strategic Weapon Systems
Targeting and Shipboard Subsystems
Missile and Re-entry Systems
Weapons System Level Analysis, Testing & Evaluation
Non-Nuclear Strategic Weapons Systems

Ordnance
Warheads, Rockets, Ammo & Other Ordnance Systems
Energetic Materials
Ordnance Safety, Logistics & Environmental Technology
Cartridge Actuated, Pyrotechnic, & Specialty Devices

Homeland & Force Protection
Homeland Security and Measured Response Options
Force Protection and Chemical/Biological Defense Systems
Mission Assurance Capabilities

Surface Warfare Logistics & Maintenance
Performance Based Logistics
Maintenance Engineering
Fleet Material Management

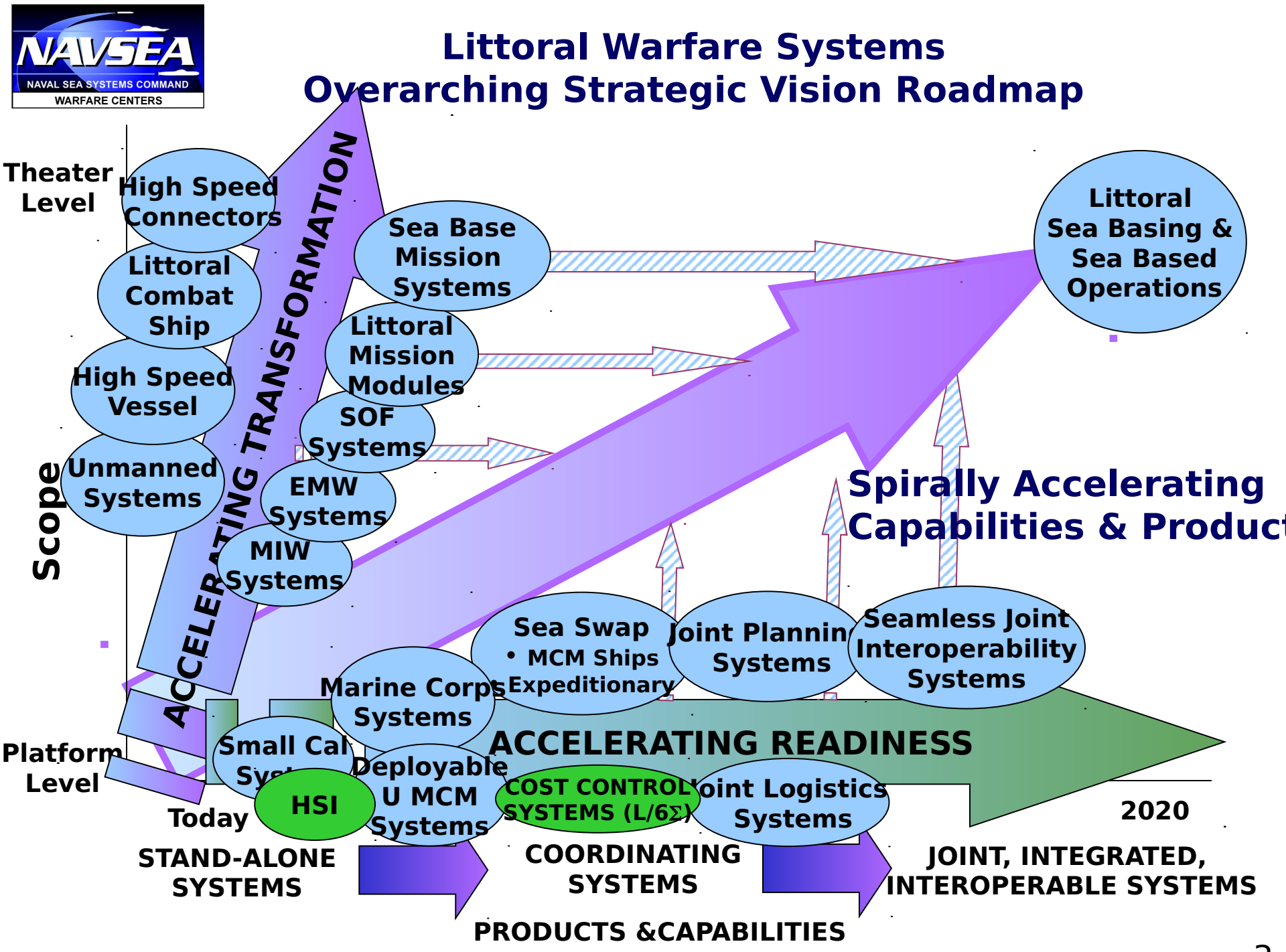
USW Command & Control Systems
Submarine Combat Systems
Submarine Sonar Systems
Submarine Imaging and Electronic Warfare
Submarine Communications
Surface USW

USW Weapon & Vehicle Systems
Torpedoes
Unmanned Undersea Vehicles
Platform Defensive Systems
USW Launchers
Submarine Missile Launcher Integration

USW Ranges, Analysis & Assessment
USW Ranges
USW Analysis
USW Operational Assessment
USW Integration

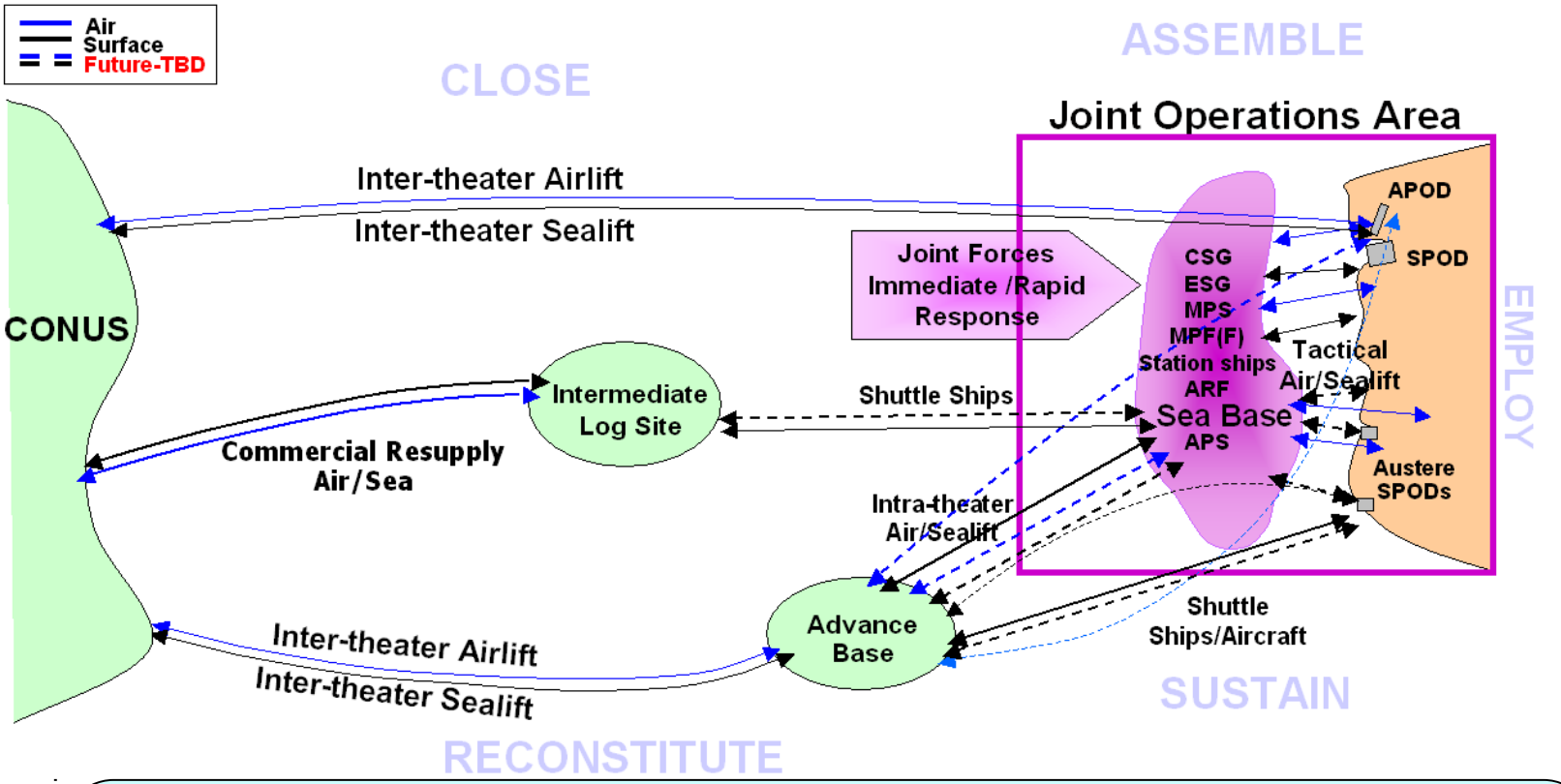
USW Fleet Material Readiness
Depots
Obsolescence Engineering

Littoral Warfare Systems
Overarching Strategic Vision Roadmap



NAVSEA
NAVAL SEA SYSTEMS COMMAND
WARFARE CENTERS

Seabasing Overarching View



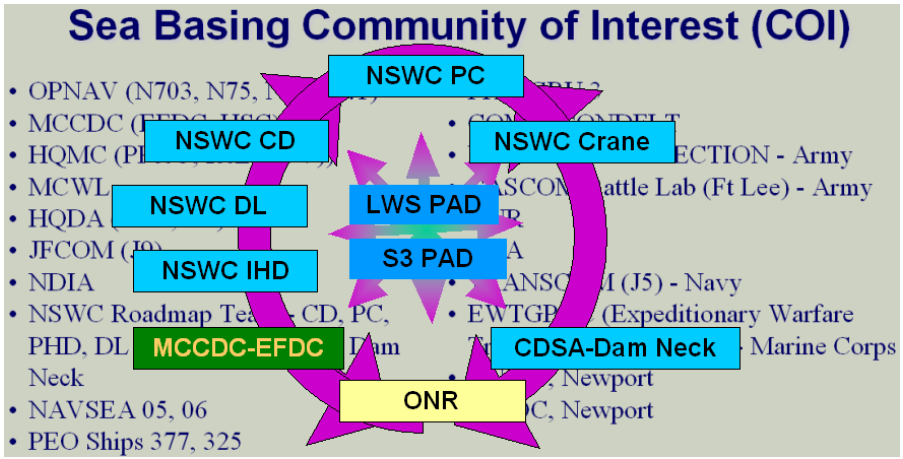
The *sea base* is an inherently maneuverable, scalable aggregation of distributed, networked platforms that enable the global power projection of offensive and defensive forces from the sea, and includes the ability to assemble, equip, project, support, and sustain those forces without reliance on land bases within the Joint Operations Area.

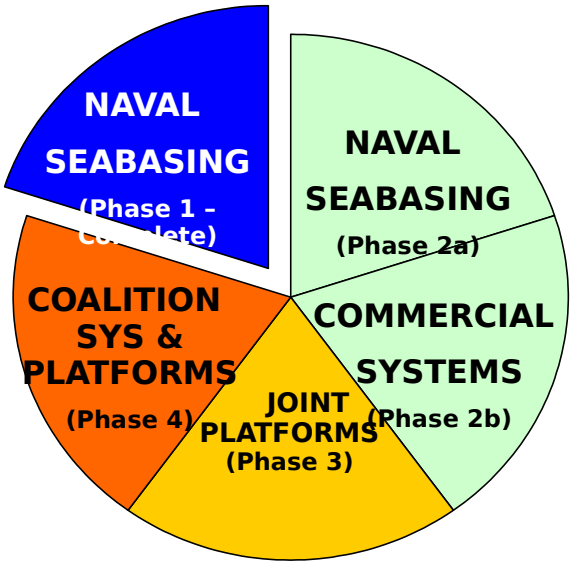
NAVSEA
NAVAL SEA SYSTEMS COMMAND
WARFARE CENTERS

Sea Basing Community of Interest (COI)

- OPNAV (N703, N75, N42, N41)
- MCCDC (EFDC, HSC)
- HQMC (PP&O, I&L (LPV))
- MCWL
- HQDA (LTA, G4)
- JFCOM (J9)
- NDIA
- NSWC Roadmap Team - CD, PC, PHD, DL (N04), IHD, Crane, Dam Neck
- NAVSEA 05, 06
- PEO Ships 377, 325
- PHIBGRU 3
- COMSECONDFLT
- PM, FORCE PROJECTION - Army
- CASCOM Battle Lab (Ft Lee) - Army
- ONR
- CNA
- TRANSCOM (J5) - Navy
- EWTGPAC (Expeditionary Warfare Training Group, Pacific) - Marine Corps
- NUWC, Newport
- NWDC, Newport

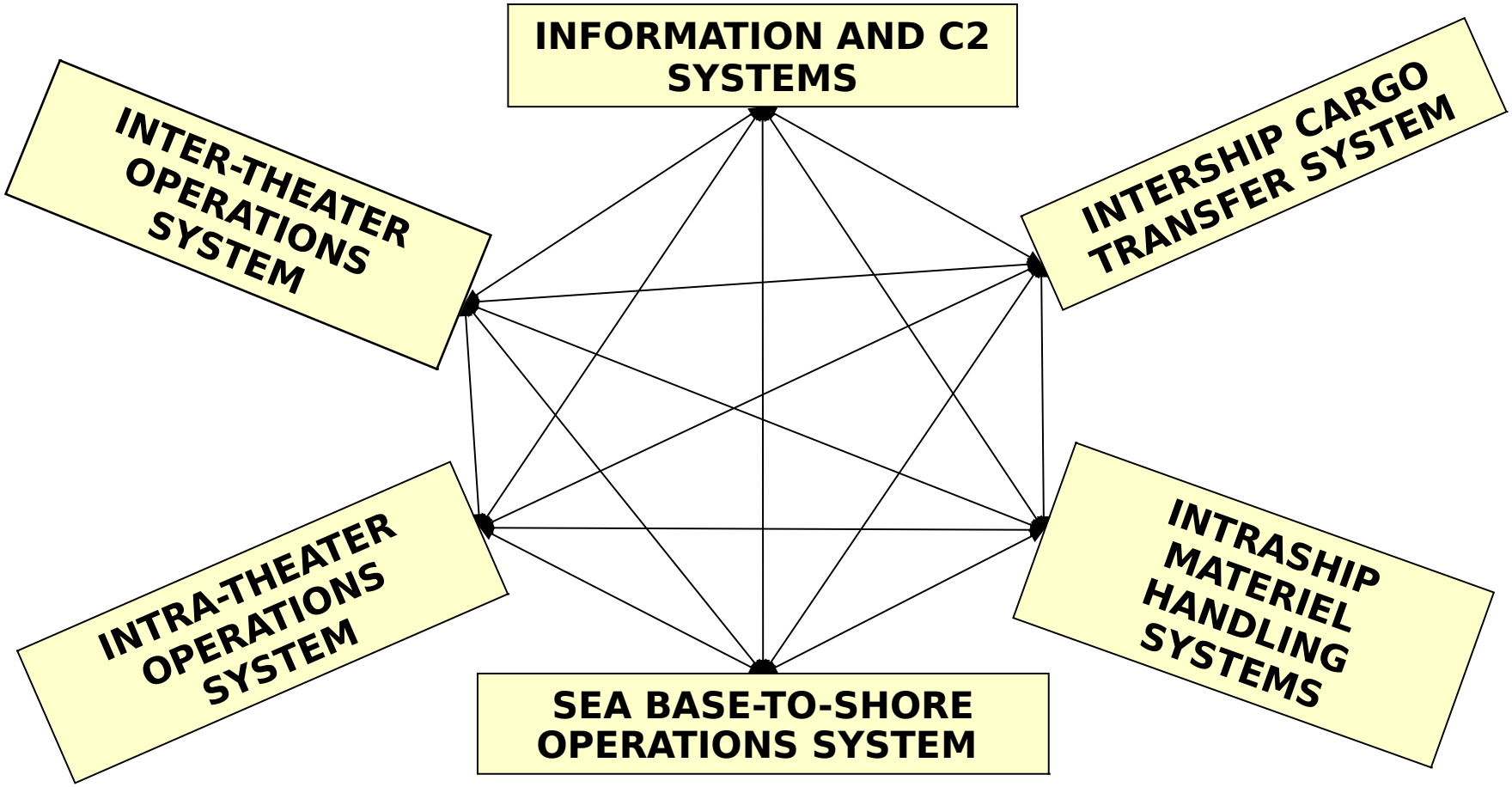
Seabasing Roadmap




NAVAL SEABASING (Phase 1 - Complete)
NAVAL SEABASING (Phase 2a)
COMMERCIAL SYSTEMS (Phase 2b)
JOINT PLATFORMS (Phase 3)
COALITION SYS & PLATFORMS (Phase 4)

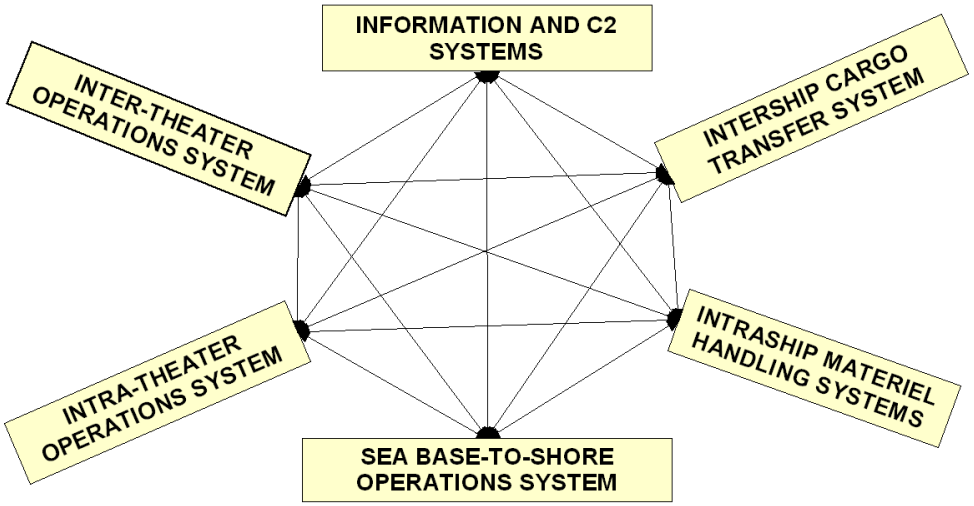
- ID, Evaluation and Assessment of Systems/Technology
- Develop Sea Base Roadmap to Fully Field Capabilities (Joint Services)
- Specific Focus on Existing Commercial and DoD S&T and R&D that supports seabasing requirements

Phase I Roadmap Results: a nested system of systems



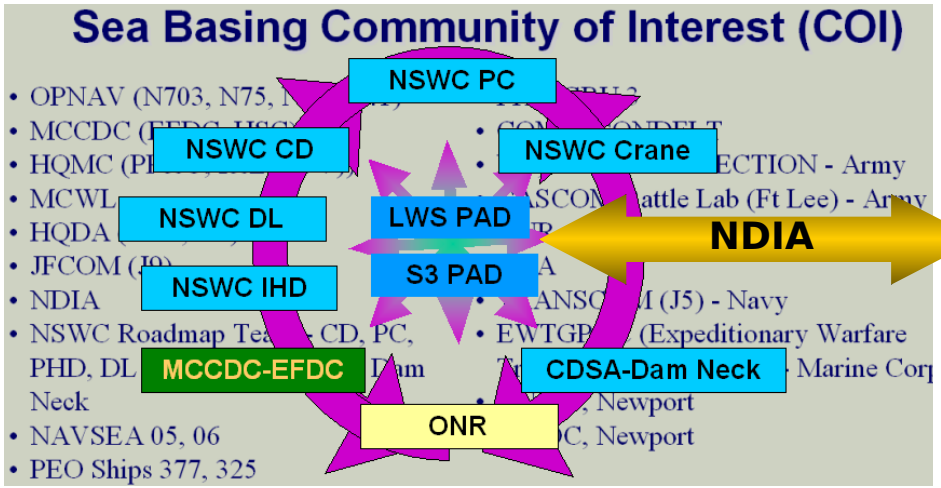
Seabasing Systems Integration effort important to the concept

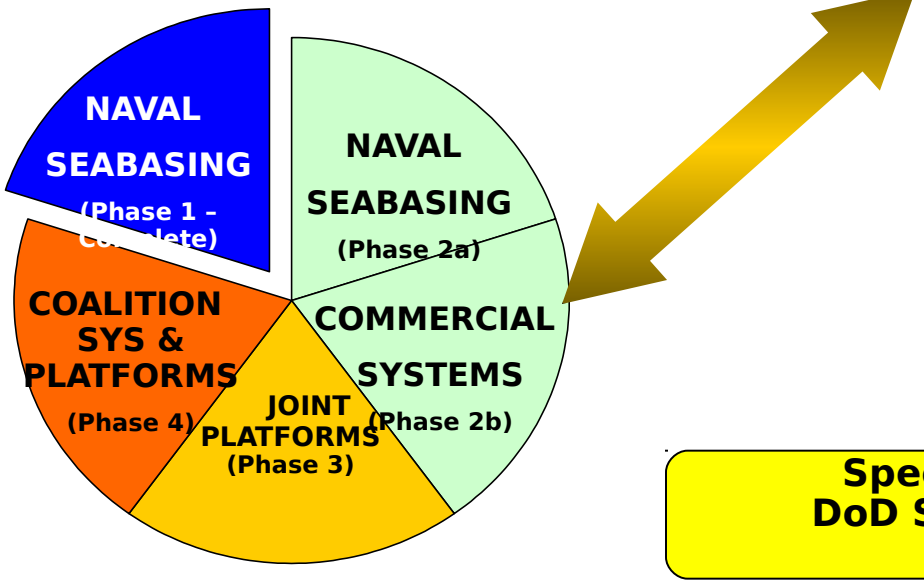
Seabasing Roadmap Challenges



- **Joint and Coalition**
  - **… interests must be addressed while maintaining the inherently NAVAL characteristics of a SEA base.**
- **MISSION CAPABILITIES**
  - **… going well beyond platform concepts**
- **Scalability**
- **Affordability**

Seabasing Roadmap – Phase 2

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DEPARTMENT OF THE NAVY
LITTORAL WARFARE SYSTEMS
PRODUCT AREA DIRECTOR
110 VERNON AVENUE
PANAMA CITY, FL 32407-7001

IN REPLY REFER TO
3300
Ser R52/012
12 MAY 2004

VADM James Amerault, USN (Ret)
Chairman, Seabasing and Sustainment Subcommittee
National Defense Industrial Association
Expeditionary Warfare Committee
2294 Mayport Road, Suite 12
Atlantic Beach, FL 32233

Dear Admiral Amerault:

Your support is requested in helping to identify an approach to meet future Sea Base Capability Needs. In response to CNO direction (see enclosures), the Product Area Directors for Littoral Warfare Systems and Ship and Ship Systems are conducting a program of identification, evaluation, and assessment of Science and Technology (S&T) and Research and Development (R&D) options which will further the development of sea base capabilities. We endeavor to provide a roadmap to achieve these capabilities.

This task is divided into several phases. We are currently completing Phase 1 which examines current Navy and Marine Corps capabilities and S&T and R&D programs of record. We are seeking support from the National Defense Industrial Association for Phase 2 of this effort. Could you provide information relative to state-of-the-art commercial technologies which would support sea base capability needs? The technologies should focus on logistics systems, warfighting equipment, connectors, and command and control systems. The technologies would serve to fill sea base capability gaps previously identified.

We eagerly look forward to working with you to provide value-added systems information and solutions to the very complex issues surfaced by sea base requirements. My point of contact is Mr. Patrick Spring, R50, patrick.spring@navy.mil, (850) 235-5621.

Sincerely,

D. P. SKINNER

Enclosures: 1. CNO memo 3300 Ser N703/3U617373 (undated)
2. Sea Base Capability Needs of 6 May 04

Copy to:
OPNAV N75
NSWC 00

Specific Focus on Existing Commercial and DoD S&T and R&D that supports seabasing requirements

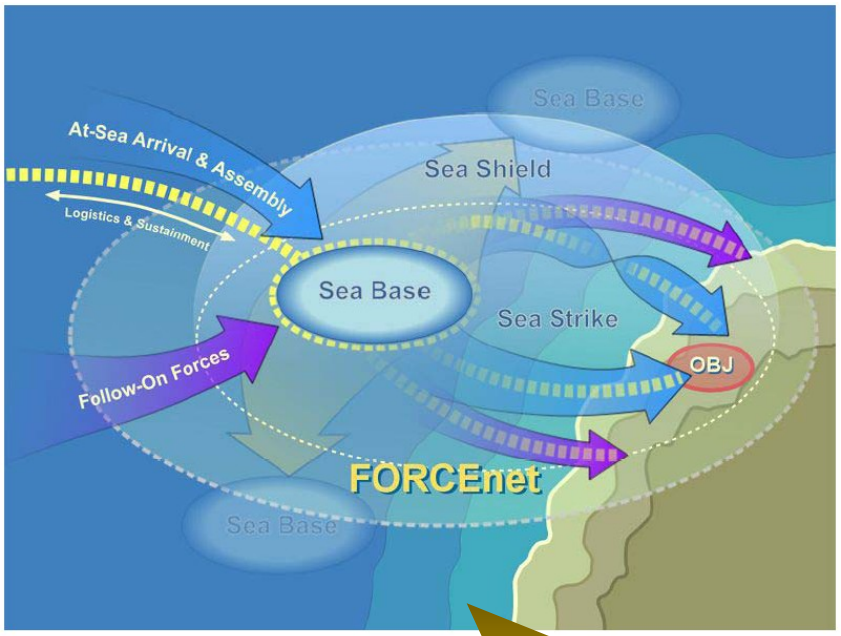
Principal Seabasing Enablers

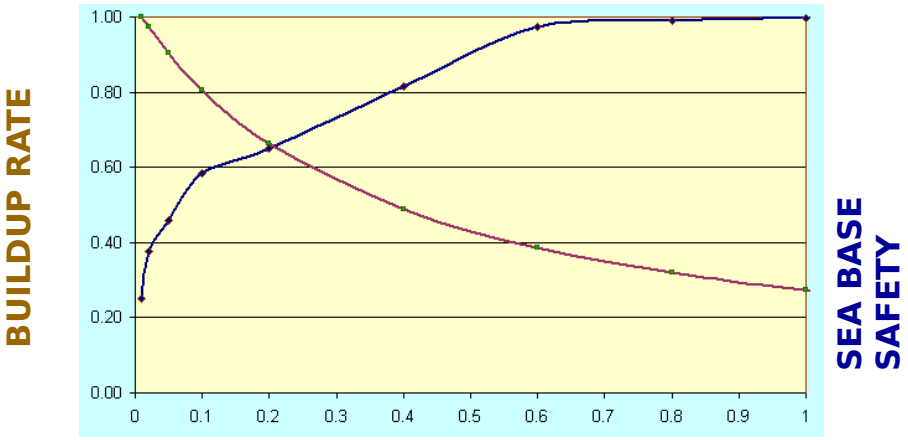
Technological

- Connectors
- Platform Mobility
- Interfaces
- Material handling
- Information Management Systems/C2
- Maintenance
- Medical

Operational

- Capable Littoral Sea Shield





SEA BASE DRIVES SEA SHIELD REQUIREMENTS

Sea Shield, a Key Enabler for Sea Base

Impact areas:

- Connectors
  - Assault connectors
  - Intra-theater connectors
  - Beachable, High Speed Connectors
  - Heavy lift air connector
- Platform Mobility
  - Speed
  - Sea Keeping
  - Maneuverability
- Interfaces
  - Sea State Mitigators
- Material Handling
  - Sea State Mitigators
- C2 from the Sea Base
- Interoperability
- Survivability
- Sustainment
- Reconstitution

Provide protection from the littoral threat

- Mines
- Diesel Subs
- Small Boats
- Land-based missile/ air

Possible intermediate relay point for inter-ship throughput; staging point for vertical connectors

Provide continuing protection for follow-on missions

Technological Enablers … revisited

- **Unmanned Systems**
  - Offboard, autonomous systems
  - Advanced sensors
  - Automated launch & recovery
- **Littoral Combat Ship**
  - Mission modules
- **Revolutionary 'coming attractions'**
  - Electric Propulsion
  - Electromagnetic Rail Gun
- **Common control for manned and unmanned systems**
  - Proximate
  - Remote
- **Advanced Mission System Automation**
- **Sea State Mitigation**

What if we could …

Use unmanned systems to refuel, rearm, and sustain manned & unmanned systems?

Design and employ unmanned connectors?

Employ hierarchical/cascading unmanned systems?

Configure mission modules for use from the sea base?

Tap into revolutionary new surface ship capabilities? For defense of the Sea Base as well as components of mission systems? Hypervelocity quick response weapon; hypervelocity small cargo delivery?

Reduce the manpower burden on LCS by placing mission/combat/support system operators on the Sea Base, or even further away?

Use advanced sensors, algorithms,

Summary

- **We're moving forward**
- **We're making great progress**
- **Sea Base / Sea Basing will enhance Naval and Joint capability beyond what we might imagine today**
- **There's room and need for your new ideas.**